

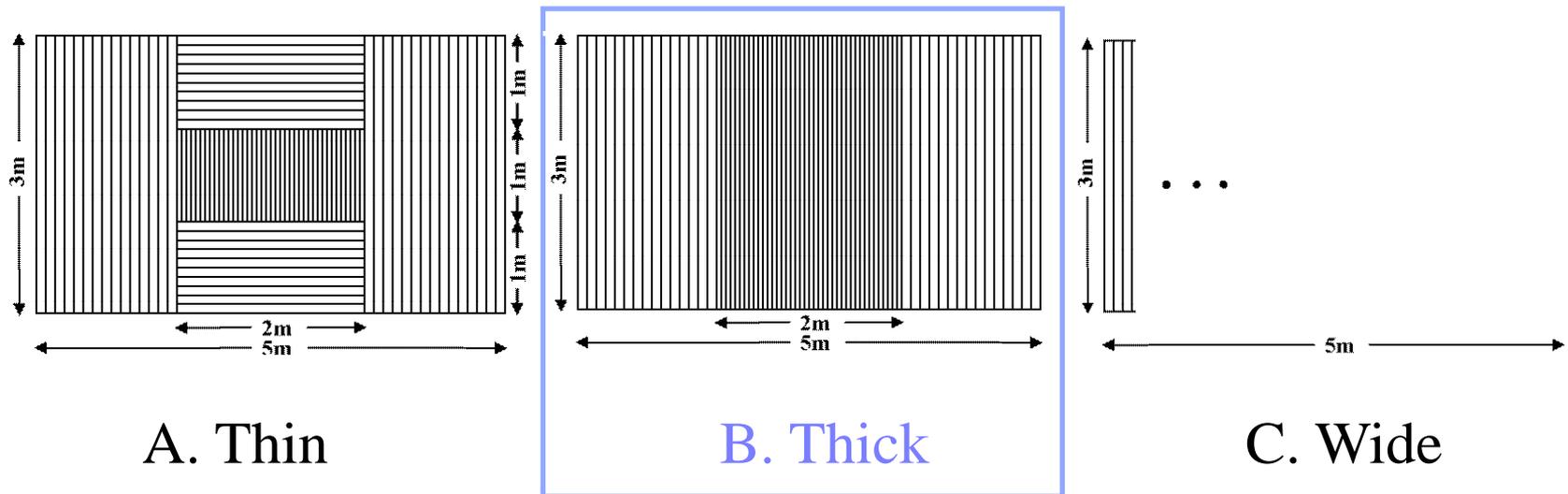
TOF Report, 10 May 2003

Overview

- I. What are we going to build?
 - -- 2 +1 options.
 - Now settled.
- II. Mock-up of support structures in photos.
- III. “Cross-talk” in PS7106 discriminators.
- IV. New calibration scheme.
- V. Status of major acquisitions.

2+1 Options

- A. “Thin” design.
- B. “Thick” design.
- C. “Wide” design .



Mock-up of Support Structures



Mock-up of Support Structures



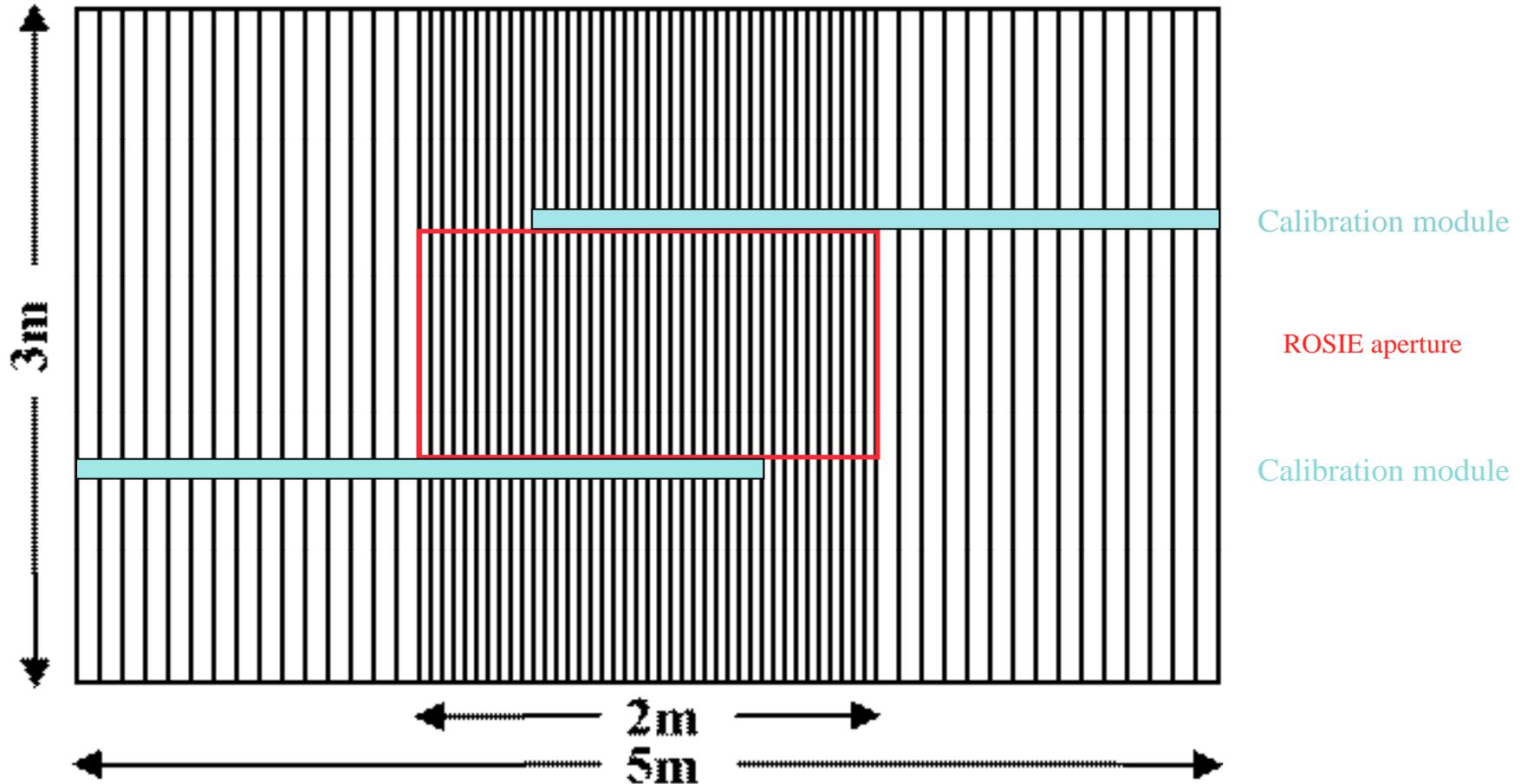
Mock-up of Support Structures



Cross-talk in PS7106 Discriminators

- Suitable graphics to illustrate this problem are not available at this moment.
- In short, pulses arriving at the A, B, and C inputs of the Phillips Scientific 7106 discriminator frequently displace the apparent arrival time of a late-arriving pulse on input D by 50-150 ps.
- We have in hand LeCroy 4413 and 4415A discriminators from PREP in which we will look for this problem. No effort yet applied to this.
- If the LeCroy discriminators also exhibit the effect, then solving the problem might require substantial effort.

New Calibration Scheme



New Calibration Scheme

- Central vertical modules (near the beamline) receive a high rate of c -speed tracks. These modules are self-calibrating.
- Calibration modules will be referenced to the central vertical modules. Tracks of any velocity are useful.
- Vertical modules in the wings will be referenced to the calibration modules. Tracks of any velocity are useful.
- Procedure depends critically on having an accurate position-delay map for the calibration modules. Map to be created using cosmic rays at Carolina and checked with a mobile auxiliary T_0 counter in MIPP.

New Calibration Scheme

- A “calibration interval” should produce enough data to fix the offset of a channel with a sigma of 10 ps (~5% of the resolution). Requires about 500 tracks per 5cm x 10cm “pixel.”
 - 8 tracks/trigger \times 60 triggers/spill \Rightarrow 500 tracks/spill.
 - 500 tracks/spill \div 3000 pixels \Rightarrow 0.15 tracks/pixel/spill.
 - 500 tracks/pixel/calibration interval \div 0.15 tracks/pixel/spill \Rightarrow 3000 spills/calibration interval, i.e. $<$ 3 hrs.

New Calibration Scheme

- The new calibration scheme is not intended to supplant entirely the scheme that utilizes a mobile auxiliary T_0 counter. The mobile counter will travel along a calibration module, and it will serve as a redundant check on the stability of the calibration modules.
- The mobile auxiliary T_0 counter is quite small. In the context of a calibration system independent of the calibration modules, it would have a sufficient data rate only if the DAQ continues to accept triggers during TPC readout. Can we make the DAQ do that without heroic efforts?

Status of Major Acquisitions

	Requested	Arrived	Cost	
Phototubes and Bases				
140 ordered	27. Jan. 03		\$106,851	
90/40 arrived		8. May. 03		\$62,029
50/100 coming		6. Jun. 03		\$0
Large Scintillator (need 30)				
16 ordered	27. Jan. 03		\$21,773	
16 arrived		30. Apr. 03		\$21,773
14 more are contingency				
Small Scintillator				
40 ordered	26. Mar. 03	7. May. 03	\$19,600	
0 arrived	25. Jun. 03			\$0
Large Winston Cones				
Out for Quotes	14. May. 03			
May do it ourselves				
Small Winston cones				
40 ordered	9. May. 03		\$4,640	
		27. Jun. 03		\$0

Status

- We have negotiated adequate space in which to do the assembly work. It is a high bay area that allows for standing the bars on end, which will be convenient for gluing the Winston cones and the aluminum caps to the bars. The photos shown earlier were taken in this space.
- We have in house two pieces of quartz and two pieces of scintillator, 1 cm x 6 cm x 6 cm, with which we will soon prepare prototype T_0 counters.
- Pre-application submitted to the DOE EPSCoR program. If it succeeds, it will defer some of the cost of the TOF system.

Finis